US Army Corps of Engineers®

R&D Program: TOWNS

Work Unit: Channel Restoration Design for Urban Flood Control Channels

Needs & Problems Addressed:

- Urban flood control efforts often cause system-wide changes that may affect the entire watershed
- Knowledge gap and insufficient guidance on accomplishing system-wide analysis and design of channel restoration systems

Objectives:

- Provide detailed guidance for use of specific new analytical tools and techniques for urban stream restoration and flood damage reduction projects
- Provide general design guidance for developing sustainable urban restoration strategies that consider entire watershed

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Work Unit Funding Profile:

FY03	FY04	FY05	FY06	Total
$150k	$175k	$175k	$0k	$500k

Comments on funding plan:

- Leverage knowledge from outside agencies, international groups, and other GI R&D

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Business Program/Missions Areas Supported:

- Inland Navigation __ %
- Coastal Navigation __ %
- Coastal Storm Damage Reduction **30** %
- Inland Flood Control/Damage Reduction **50** %
- Environmental Protection & Quality **20** %
- Multi-Purpose (Hydropower, Rec & Water Supply) __ %
- Emergency Management __ %
- Regulatory __ %
- Support for Others __ %

(Must to add to 100%) Total: 100 %

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CW Strategic Goals Check List: (check if applies)

- Provide sustainable water resources development & mgmt _X_
- Restore past environment degradation ___
- Provide project services of high quality _X_
- Reduce losses from natural & manmade hazards _X_
- Supports being a world class technical leader _X_
- Addresses strategic or system needs in a framework or integrated approach by developing:
  - Methods or decision support tools _X_
  - Technology to improve life cycle productivity _X_
  - Technology to monitor systems, provide feedback and develop operating guidance ___

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Which “short term” field needs does this support:

- Enhances functional performance of stream restoration projects for urban flood control
- Preserves and enhances environmental quality and sustainability
- Supports project-level decision making
- Lowers life-cycle costs through effective design

Field Review Group Relative Ranking:

- FRG planned for 21-22 AUG 02

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Listening Sessions Check List: (check if applies)

- Improves data sharing/exchange with the public in these areas:
  - Provides one stop shop for maps & data for basin wide planning ___
  - Provides data to make informed decisions ___
  - Provides a system for basin wide planning _X_
  - Provides information about what is happening at Corps facilities ___ (up to date web sites)
- Tech Transfer plan to include educating the public X
- Coordinate research, models, analysis with regulatory agencies to insure results will be accepted _X_
- Develop R&D products:
  - For watershed management plans, not just at the project level _X_
  - To include aesthetics as components of all projects _X_
- Create better models for ground & surface water ___

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Products:

- Four Technical Notes: Impacts of urban development
  - System hydrodynamics
  - Sediment processes
  - Channel stability
  - Ecosystem functions
- JP: Stability thresholds for urban stream systems
- TN: Structural methods to limit channel degradation
- TN: Role of riparian systems in urban flood management
- TN: Nonstructural techniques to manage urban flooding and preserve ecosystem integrity
- TN: Hydrologic and ecological benefits of culvert daylighting
- TN: Sediment transport analyses in urban stream systems
- TN: Restoring aquatic habitat in urban channels
- TN: Urban channel design to preserve ecosystem function
- TR: Guidance for restoring and managing urban flood control channels and corridors
- JP: Predicting urban flood channel response to development

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Benefits

- Direct:
  - Reduced life-cycle costs
  - Provides guidance to consider specific urban channel problems within context of an entire watershed
  - Improved flood protection design
- Indirect:
  - Provides fundamental knowledge necessary for effective planning and design of channel restoration in urban flood control channels

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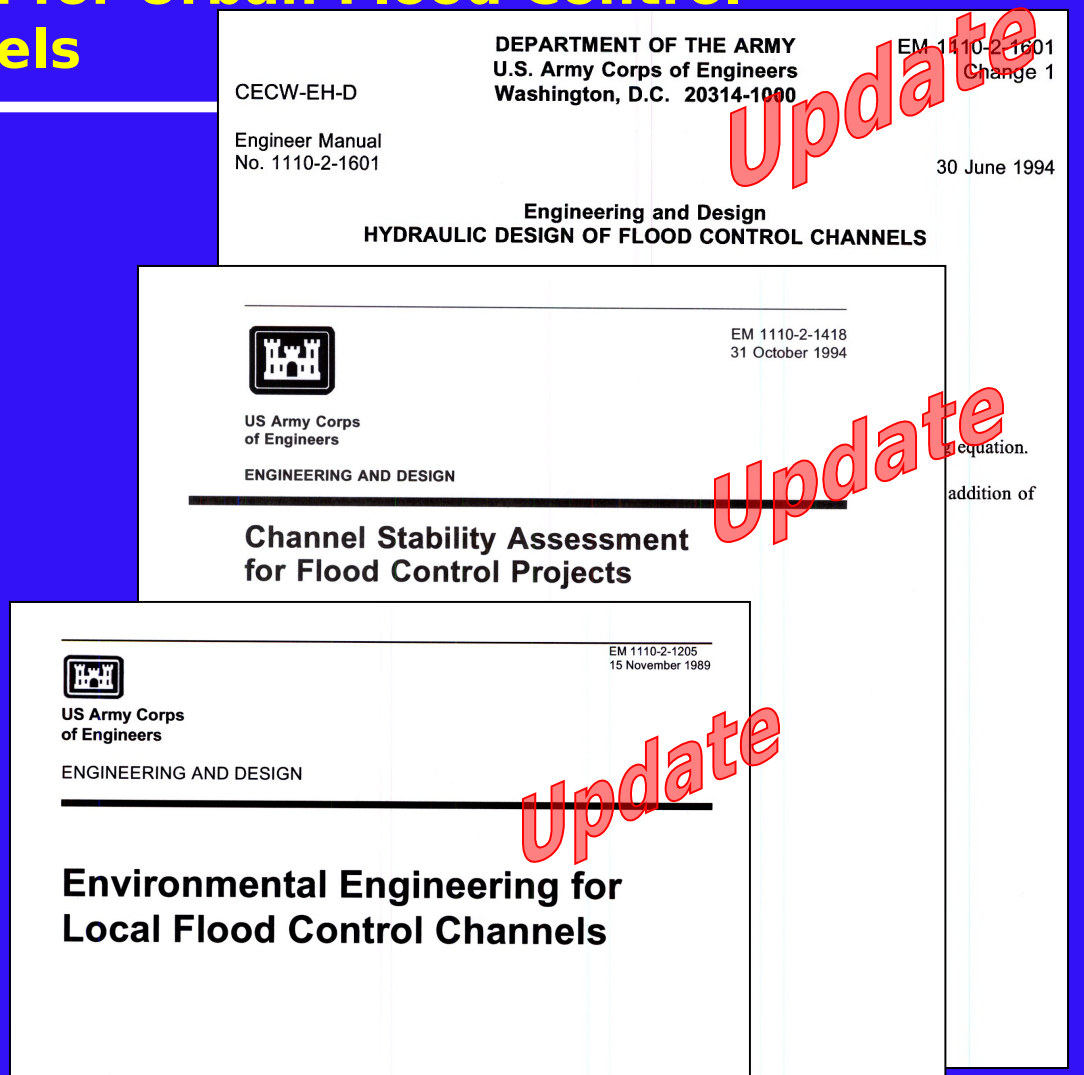
Technology Transfer Plan:

- Technical Notes
- Journal Paper
- Design guidance documents
- Workshops
- Leverage results with other USACE research programs, such as RSM and SMART
- Publicize results on TOWNS website



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Why should the Corps fund this R&D, instead of private industry and/or others:

- System-wide approach to urban flood control channel restoration is primarily a government function thus private industry has little incentive to develop new methods

What is Impact if not started:

- Higher life-cycle costs if ineffective designs are used
- Risk to public safety if adequate conveyance is not provided, thus increasing stages